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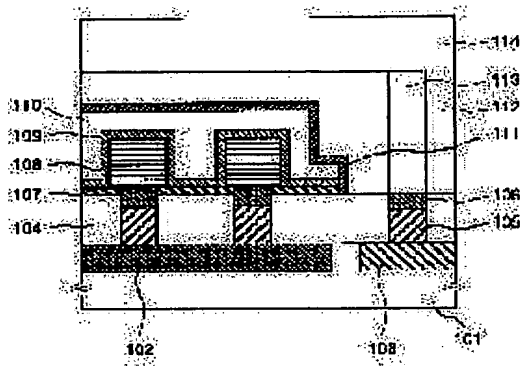
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**(54) SEMICONDUCTOR DEVICE HAVING HIGH FERROELECTRIC THIN-FILM
CAPACITOR AND MANUFACTURE THEREOF**



(57)Abstract:

PROBLEM TO BE SOLVED: To increase the capacity of a capacitor, to lessen leakage current in the capacitor and moreover, to prevent the electrical performances of semiconductor active elements from being deteriorated by a method wherein a layer having a hydrogen diffusion stopping action is arranged between the capacitor and the elements at a region arranged with the capacitor.

SOLUTION: A memory cell transistor 102 and a peripheral transistor 103 are respectively formed on a silicon substrate 101 as a semiconductor active element. There is an inter-layer insulating layer 104 for insulating electrically both a capacitor layer and a transistor layer from each other between the capacitor and transistor layers, and the capacitor and transistor layers are electrically connected with each other through plugs. Moreover, a hydrogen diffusion stopping layer 107, which is lower in the range of hydrogen diffusion than that of hydrogen diffusion in the layer 104 and consists of an insulator, is arranged between the layer 104 and the

capacitor layer. The deterioration of a capacitor due to hydrogen which has diffused from the lateral direction of the capacitor is inhibited by the actions of a second plug 106 arranged under the lower part of the capacitor and the layer 107.

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